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Background Report Reference

AP-42 Section Number: 9.13.3

Background Chapter: 2

Reference Number: 5

Title: The Art of Kettle Style Potato Chip
Cooking, Snackworld, p. 41

Brown, Bill

March 1989

Sec 2, Ref 5

2
5

The Art of Kettle-Style Potato Chip Cooking

There's more than one way to cook a kettle-style potato chip, and the best way for any given company depends on many factors

By Bill Brown

Forty years ago, nearly all potato chips were cooked in individual kettles on a batch basis. In its attempt to expand and increase business, the snack industry placed its priority on developing continuous fryers that offered high production rates and lower costs.

Today, the industry has come full circle to find that batch processing is again in demand. In the past few years, many manufacturers have decided to sell kettle-style potato chips to capitalize on public demand for products positioned as "homestyle" or "old-fashioned."

In the process, many company executives have wrestled with the question

of whether to actually use kettles to produce the chips or make the chips using modified continuous fryers, which offer more efficiency but produce a slightly different taste, color, and texture than real kettle cooking.

The decision on which method to use is based on a manufacturer's evaluation of the market potential for the potato chip and on which equipment can be used to manufacture the product at a profit. This discussion of batch versus continuous processes will consider each process and the specific product attributes they produce.

There are many different batch- and continuous-type potato chips on the market. These include "kettle-style" chips from single batch-cooker operations, "kettle-style" chips from modified continuous cookers, "regular style" chips manufactured on high production-rate continuous processes, and "composite" chips made by modifying both the standard potato base and the continuous processing systems. All of these different processes provide defined products with specific attributes.

What are the differences between batch-style and continuous-style potato chip processes and what are the differences in the potato chips produced? These differences include production

rate, system cost, product texture, color, and taste.

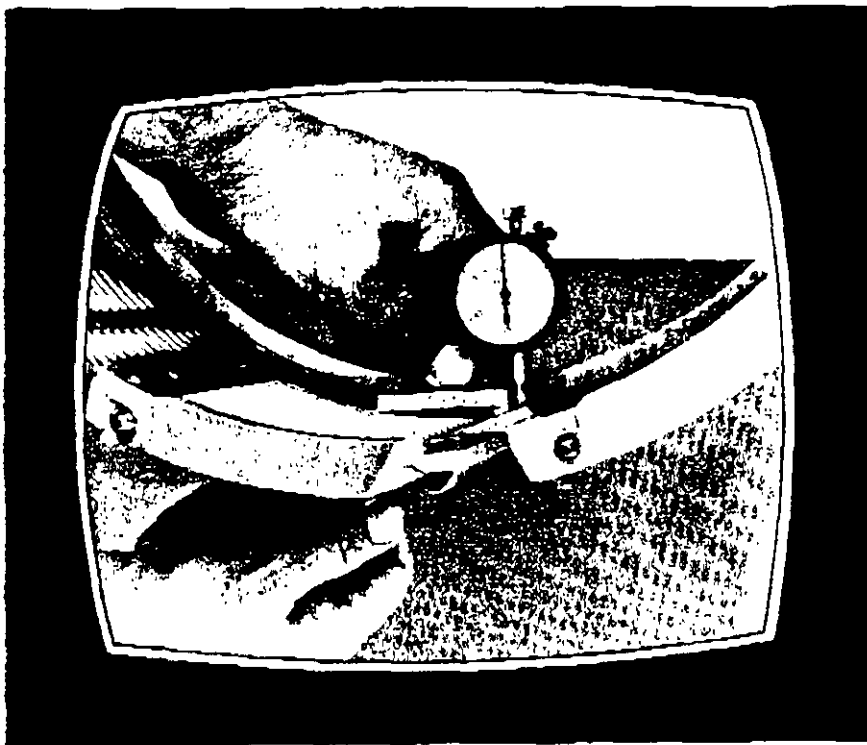
Color. The batch-cooking process for potato chips generally produces a slightly darker chip than a continuous-process chip. The color of the chip is influenced by several variables that include potato variety used, peeling, slicing thickness, cooking oil temperature, and product handling during cooking. The "burned" appearance of high-sugar varieties or over-cooking generally is avoided. Peel and slice thickness will affect not only color, but the texture. Either batch or continuous peelers are used in the batch systems. The size and type are determined by desired production rates. The oil temperature can also affect product look and color.

Cooking time is critical in determining the color of the product and should be adjusted for variety and slicing differences. Batch processing generally involves an individual or a mechanism actually stirring or "working" the batch. Different stirring methods and techniques do alter the color and consistency of batch-cooked chips.

In continuous chip operations, the color variability is not due to process change as much as batch systems, but is instead due to variations and

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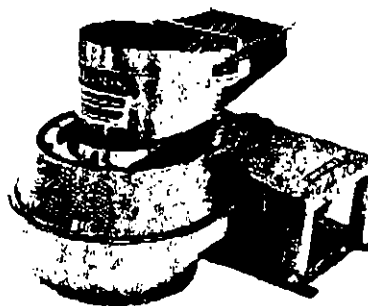
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changes in the potato variety and condition.

Texture. Batch-cooked potato chips usually are slightly harder in texture than continuous chips. The temperature differential is one of the keys to producing a harder chip in batch processing. Other influences on texture include potato variety, slice preparation, and types of oils used. There has been much effort expended in the last several years by equipment companies to manufacture a "kettle-style" chip on continuous processing equipment.

Production Rates. Production rates vary depending on equipment used. Batch kettles offer manufacturing rates of 80 to 200 pounds of finished chips per hour. Factors influencing this include size of the kettle, pounds of slices per batch, and stirring techniques. The production rate also varies according to the desired color and texture of the finished product. Continuous processing systems can provide chip production rates of 200 to more than 5,000 pounds per hour. These rates basically depend on the cooker size and oil heat-exchange capabilities.

Equipment Selection. All equipment manufacturers will work with producers to assess needs and costs. Some of the suppliers and equipment available are described in the article on page 44 of this issue.

Prices for batch systems range from \$30,000 to approximately \$65,000 per kettle. Kettle differences account for this high cost differential. For example, kettles with immersion-type burners offer a choice of size, basic equipment, and construction characteristics, while fire-box style batch cookers offer fewer options.

Options such as automatic take-out systems, special burner controls, oil filtering; slice-feed options, and stirring options also contribute to cost differences. Continuous potato chip cooker systems range in price from \$200,000 to more than \$1 million. Again, the price depends on the options, including size (production rate), heat exchanger needs, temperature controls, and other support equipment. ▼

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